

# Rudderless

NASA aeronautics chief hopes new administrator will push for clear policy to guide facility closings



FRANK MORRING, JR./WASHINGTON

**N**ASA is attempting to absorb a 40% cut in its aircraft technology-development programs without a clear national aeronautics policy to guide it—leaving the door open to parochial logrolling as the agency mothballs wind tunnels to achieve the new deep-space focus ordered by President Bush.

With the drumbeat growing on Capitol Hill to save constituent jobs threatened by the shrinking aeronautics accounts, the official in charge of managing the shrinkage says he needs a little more guidance to do the job right.

"I think we need a dialogue leading to a national policy," says J. Victor Lebacqz, associate administrator for aeronautics.

Lebacqz says whoever Bush appoints to run NASA should try to generate a consensus on what should be the space agency's role inside the atmosphere. Such a consensus would be comparable to the one that has developed behind the White House space exploration vision coordinated by former Administrator Sean O'Keefe, who resigned and left the agency last month.

The Glenn Research Center in Cleveland and the Langley Research Center in Hampton, Va., both face sharp cutbacks growing out of reductions in aeronautics spending under the Bush administration's Fiscal 2006 budget request. Langley is bracing for the loss of 1,000 jobs, while Glenn managers estimate a reduction of 700 (*AW&ST* Feb. 14, p. 37).

"To cut these programs would seriously undermine America's ability to compete militarily and commercially as the next generation of aircraft is developed," said Sen. George Allen (R-Va.), in a fairly typical reaction to the budget request. House Science Committee members plan a hearing on NASA aeronautics issues this month that's likely to include the future of agency wind tunnels and other ground test facilities.

The Fiscal 2005 NASA appropriation forbids the agency from closing wind tunnels in the near term, and orders a plan for their future disposition. Even before the Fiscal 2006 budget request was released, NASA put a list of wind

tunnels and other facilities at Langley and Glenn on the chopping block and asked for feedback from facility managers about the impact of closing them.

"A likely scenario is that we close ground test facilities and capabilities that are no longer necessary to support the aeronautics research program, including most of our large wind tunnels and engine test cells," stated Thomas B. Irvine, acting director of the mission support division in Lebacqz's office.

**AMONG FACILITIES** on the list at Glenn are the 10 X 10 Supersonic Wind Tunnel, Hypersonics Test Facility and the combustion and turbomachinery test cells in the Engine Research Building. At Langley, the list included the 14 X 22 Subsonic Tunnel, the National Transonic Facility and several high-Mach-number tunnels in the Aerothermodynamics Lab.

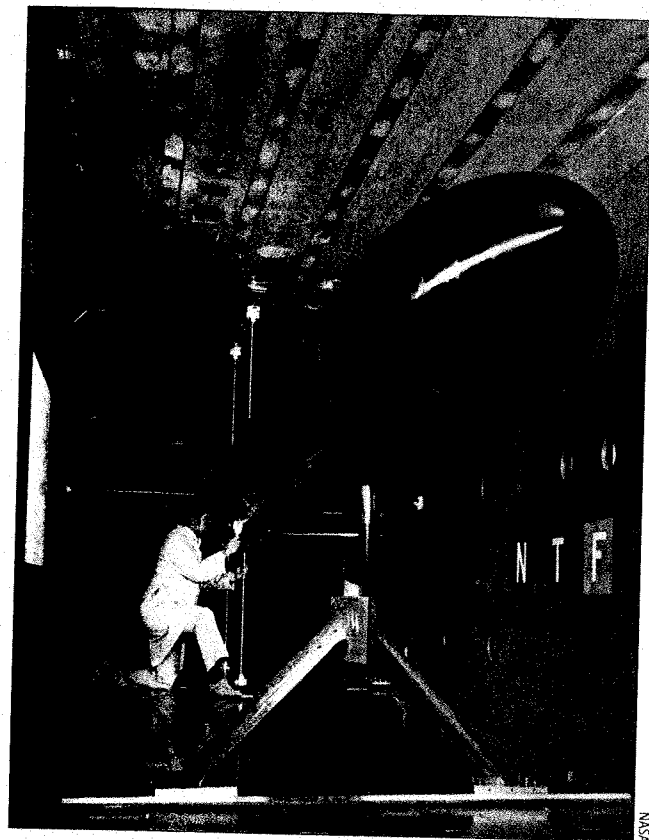
Irvine says the downsized aeronautics program outlined in the Fiscal 2006 budget would require "very few" of NASA's existing aeronautics ground test facilities. While the proposed aeronautics program would continue funding at previous levels for aviation safety and security and for increasing the capacity of the air trans-

portation system, it would cut vehicle systems work by \$100 million in Fiscal 2006 and by \$200 million in 2007.

"There's roughly 40% less money to spend on vehicle-related activities," says Lebacqz.

The aeronautics mission directorate has narrowed its vehicle work to four programs, all of which are aimed at an eventual flight demonstration of technologies that in many cases will be tested on the ground first. For subsonic flight, the goal is redesigning engine inlets, landing gears and other airframe components to lower noise to the point that it stays within airport boundaries. For supersonic flight, NASA wants to continue sonic-boom reduction work that has already seen flight test on a modified F-5. The ultimate goal is reducing sonic booms to the point that the FAA could permit supersonic flight over land.

To eliminate hydrocarbon emissions from aircraft, the Fiscal 2006 budget includes work on advanced fuel cells and lightweight electric motors to support an eventual demonstration of a small electric aircraft. Finally, the proposed program calls for development of a prototype high-altitude, long-endurance unpiloted ve-



hicle that could carry scientific or other sensors for as much as two weeks. That same technology could be applied on Mars, where the low atmospheric pressure corresponds to the high-altitude environment on Earth.

"My personal view is that there are tremendous breakthroughs still to come in aeronautics," he said. "That's one reason we've focused in on the four that I

tively consolidate and broadly modernize existing test facilities, and to prescribe common management and accounting directions for NASA's facilities," Rand stated in a report on NASA wind tunnels released last November. "This vision cannot be developed apart from other critical national decisions."

Within NASA, Lebacqz says he has tried to "corporate" aeronautics plan-

talked about, but the facilities to support those breakthroughs or other breakthroughs are still required."

Lebacqz is far from alone in his call for a national aeronautics policy. Others making the

ning instead of leaving it to the field centers. Irvine's letter to facility managers was part of an effort to collect the information needed for informed decisions at NASA headquarters. Those decisions will go into the wind tunnel plan Congress ordered NASA to produce by the end of September.

But the Rand study of 31 ground-test facilities recommended NASA close only two wind tunnels, and suggested

**Although it was developed to test aircraft models, the Navy has also used Langley's National Transonic Facility to simulate the effects of flowing water on submarine models. The facility may be closed.**

call include the Rand National Defense Research Institute.

"For NASA leadership, the most critical issue is to develop a specific and clearly understood aeronautics test technology vision, to continue to support developing plans to very selec-

t that earlier facility shutdowns were poorly conceived. The Rand report recommended that NASA work with the Defense Dept. to rationalize the U.S. inventory of wind tunnels and other aeronautics test facilities, eliminating duplication where possible and finding ways to consolidate facility use (*AW&ST* Nov. 29, 2004, p. 20).

"It's a very complex problem," Lebacqz said. "There's not enough money to have them all open, particularly with this refocused approach. And the solution to the problem is not clear to me."

Also in the mix is the proper role in NASA planning for the U.S. aircraft industry, which has benefited from pre-commercial technology developed by NASA and its predecessor, the National Advisory Committee for Aeronautics, chartered in 1915. Harry C. Stonecipher has faulted the industry for its lack of guidance to government planners.

After Boeing and McDonnell Douglas lost interest in NASA's High-Speed Civil Transport effort, "the aeronautics industry let NASA down because we did not come forward with good aeronautics programs that we could work on together," Stonecipher said at the time (*AW&ST* Jan. 28, 2002, p. 27).

Rand also called for more investment in computational fluid dynamics (CFD), which uses computer models to predict the effects of design changes. SpaceShipOne, the private suborbital rocket that won the \$10-million Ansari X prize last year, was largely developed with CFD, but when the models proved inadequate, engineers at SpaceShipOne builder Scaled Composites improvised a wind tunnel by mounting flight surfaces on a pickup truck and measuring the airflow effects as the truck drove along (*AW&ST* Nov. 17, 2003, p. 39).

"My personal view is that if we don't do adequate ground-based testing before we go to flight test, we'll make mistakes," says Lebacqz.